UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 5

DATE: AUG 0 3 2006

SUBJECT: Inspection Report - Packaging Corporation of America, Filer City, Michigan

FROM: Farro Assadi, Environmental Engineer 8/3/06
MI/WI Enforcement Section

THRU: Bonnie Bush, Acting Chief BB
MI/WI Enforcement Section
Air Enforcement and Compliance Assurance Branch

TO: File

Inspection Date:

July 25, 2006

Plant Location:

Packaging Corporation of America (PCA) is located at 2246 Udell Street, Filer city, Manistee County, Michigan. The air quality status for Manistee County is attainment/unclassified for all criteria pollutants.

SIC Code(S):

2621, Pulp and Paper Mills.

Participants:

Farro Assadi, U.S. EPA
Robert Dickman, MDEQ
Richard Brown, Environmental Manager, PCA

Agenda:

On the morning of Tuesday July 25, 2006 I arrived at PCA and met with Mr. Richard Brown, PCA's environmental manager, at the security guard station. Moments later we were joined by Mr. Robert Dickman, from Michigan Department of Environmental Quality. After the preliminary introductions and presentation of

our credentials, we went to Mr. Brown's office and held a meeting during which we discussed facility's processes, emission sources and record keeping requirements. The discussions lasted until noon at which time we stopped for lunch break. After the lunch break we started the plant inspection which continued until about 4 PM.

Nature of the Business and Facility Background:

PCA is the sixth largest manufacturer of container board and corrugated packaging products in the United States. PCA produces a broad range of linerboard and corrugating medium, as well as a wide variety of corrugated packaging products including shipping containers used to protect and transport manufactured goods, multi-color boxes and displays and special design boxes used in the food and agriculture industry. In 2005, PCA produced over 2.3 million tons of container board and shipped 31.2 billion square feet of corrugated products. PCA employs over 8,100 people nation wide.

The PCA Filer City Mill which was originally constructed in 1917, is a semi chemical pulp mill that produces about 355,000 tons of corrugating medium annually. The raw material used to produce corrugating medium consists of hardwood chips and up to 140,000 tons per year of old recycled corrugated containers. For the year 2002, the facility reported the following actual emissions:

CO	650	T/Y
Nox	487	"
PM10	335	"
PM	7	"
SO2	1328	"
VOC	2135	"

Process Description

The primary manufacturing operations at this facility include a sodium carbonate wood pulping process, a chemical recovery process, and a paper production process. In addition, the facility includes a woodyard and chipping operation and a power plant which consists of three boilers and a turbine generator.

Wood Receiving and Chipping:

The facility receives mixed hard wood logs and wood chips(aspen, maple and oak) by truck and stores them in the storage yard next to the mill. From the wood yard the logs are transferred to the chip mill where they are sent through a de-barker. In the de-

barker the logs tumble against one another and the friction caused by the tumbling action removes the barks from the logs. The barks produced from this operation are hauled to TES Filer City Station and used for fuel in their boilers. The logs are then conveyed to a chipper which cuts the logs into one and half by two inch chips. The chips are either transferred to the chip storage bins at the pulp mill for further processing in the digesters or to the storage piles in the wood yard for future use. The facility uses covered conveyor systems to transport the wood chips from the yard and the chipper to the storage bins. The conveyors and the storage bins are equipped with cyclone dust control systems.

Regulatory Requirements:
Woodyard and chipping activities are subject to the requirements of the facility's Title 5 permit (issued December 1, 2003) which establishes limits on particulate matter emission rate and visible emissions.

Wood Pulping Process

To produce pulp, the facility uses two identical continuous digesters each consisting of 6 horizontal cylinders. The digesters use a solution of sodium carbonate (white liquor) and high pressure steam to partially dissolve the lignin in the wood chips and separate the pulp. The cooking cycle in each digester is about 12 minutes and once completed the digester's content which include partially cooked pulp and spent liquor are blown into a vessel called the blow tower. From the blow tower, the pulp slurry is pumped to a mechanical shredder/refiner to further separate the wood fibers from the lignin. After the refiner the pulp is conveyed to two vacuum drum rotary washers which are placed in series. At the washers the spent pulping chemicals are washed out of the pulp mat that is formed on the washers' screens. The gases emitted from the blow tower and the washers are collected by the facility's low volume high concentration (LVHC) collection system and ducted to the combustion chambers of boilers 1 and 2 at the powerhouse. The collected washer filtrate (weak black liquor) which contains the spent cooking chemicals and wood lignin is initially stored in one of the five black liquor storage tanks and then pumped to the chemical recovery system which is described later in this report. The washed pulp obtained from the washers is further refined by a series of knotters, refiners and pulp screens before it is mixed with pulp obtained from recycled material and sent to the corrugated paper machines.

During the inspection I went to the pulping department control room and recorded the following information for the digesters:
Steam Rate: 22,000 lbs/hr, at 360°F and 135 PSI
Feed Rate: 96 tons of wood chips/hr
Sodium carbonate : 155 lbs/ton of wood chip

Regulatory Requirements:

Emissions from the pulp production process are subject to the requirements of the national emission standards for hazardous air pollutants (NESHAP, Pulp & Paper MACT I, Subpart S) at 40 C.F.R. § 63.443. This regulation requires that the owner or operator of a pulping system using a semi-chemical or soda process control HAP emissions from LVHC system by 98 percent or more by weight, or to reduce HAP emissions by using a boiler or recovery furnace with a heat input capacity greater than or equal to 150 mmBtu, by introducing the HAP emissions stream with the combustion air. As was mentioned above PCA is meeting this requirement by introducing the HAP emissions from its digesters and washers into the flame zone of boiler #1 and boiler #2.

Black Liquor Recovery System

The recovery system includes a multiple-effect evaporator and a fluidized bed chemical recovery reactor (Copeland Reactor). The multiple effect evaporator on average processes about 250 gallons per minute (GPM) of weak spent liquor. The evaporator utilizes steam supplied by the power plant to vaporize the excess water from the spent liquor. Emissions from the evaporator are routed through a condenser and then collected by the LVHC system and combusted at boilers 1 or 2. The reactor is rated at about 180 MMBTU/hr and is capable of burning up to 100 GPM of concentrated black liquor. The hot flue gases generated by the reactor are exhausted through a venturi scrubber, a wet electrostatic precipitator and a regenerative thermal oxidizer (RTO) and then discharged to the atmosphere.

To recover the sodium based chemicals, spent liquor from the pulp washers which contains about 13 percent dissolved solids is circulated through the multiple-effect evaporator system described above, increasing the solids concentration to about 49 percent. The concentrated liquor is then injected into the fluidized bed reactor where the organic material (mostly wood lignin) in the liquor burns and generates sufficient heat to dissolve the spent sodium carbonate which then settle into the reactor's bed forming small pellets. The pellets are then removed from the reactor and transferred to the dissolving tank

and mixed with condensates from the evaporator to make green liquor. Sodium carbonate is added to the green liquor to produce white liquor which is then reused in the digesters.

All the parameters relating to the operation of the pulp production system, the chemical recovery system and the emission controls are continuously monitored by the operators at the pulp mill's control room which was visited during this inspection. At the control room we observed the following parameters on the computer monitor:

Reactor Combustion Rate = 53.9 GPM black liquor at 48.6% solids
Reactor Combustion Zone Temp.= 1300°F
RTO Temp.= 1742°F
Scrubber Liquid Flow Rate = 111 GPM

Regulatory Requirements:

The emissions from the black liquor recovery system are subject to the requirements of the facility's Renewable Operating Permit #199600411, and the national emission standards for hazardous air pollutants (NESHAP, Pulp & Paper MACT I and II, Subparts S and MM) at 40 C.F.R. § 63.443 and § 63.862(c)(2).

40 C.F.R. § 63.443 requires that the owner or operator of a pulping system using a semi-chemical or soda process control HAP emissions from LVHC system by 98 percent or more by weight or to reduce HAP emissions by using a boiler or recovery furnace with a heat input capacity greater than or equal to 150 mmBtu, by introducing the HAP emissions stream to the flame zone with the combustion air. The multiple effect evaporator is a LVHC emission source under MACT and therefore is subject to the requirement of this regulation. As was mentioned earlier PCA is meeting this requirement by introducing the HAP emissions from the evaporator system into the flame zone of boiler number 1 and boiler number 2.

40 C.F.R. § 63.862(c)(2) states that the owner or operator of each existing or new semi-chemical combustion unit must ensure that: (i) the concentration of gaseous organic HAP, as measured by total hydrocarbons reported as carbon, discharged to the atmosphere is less than or equal to 2.97 lb/ton of black liquor solids fired; or (ii) the gaseous organic HAP emissions, as measured by total hydrocarbons reported as carbon, are reduced by at least 90 percent prior to discharge of the gases to the atmosphere. The Reactor described above is an affected source under this regulation and the stack tests conducted by the company on August 31, 2004 and December 16, 2004 demonstrated

that the HAP emissions were below the limits under the Rule and the ROP which incorporates the above MACT Standards.

Paper Machines

PCA operates three Fourdrinier paper machines that were installed between 1898 and 1966. They are identified as the Nos. 1, 2 and 3 paper machines. The machines have a combined production capacity of about 1000 tons of paper per day. Each paper machine has a holding chest where the pulp slurry is pumped into. Various process additives such as biocides and de-foamers are added and blended in at this point and the pulp is then discharged to the paper machine's head box. From the head box the pulp is laid on a moving wire table where the fiber web is initially formed and the water content of the web is reduced by 70 to 80 percent. The web then passes through the press section where more moisture is removed from the pulp fiber by pressing the web between rollers. The fiber web then passes through a set of steam heated dryers and size presses. After exiting the dryers, the paper is rolled and transferred to the shipping area.

It is estimated that the paper machines emit between 45 to 55 tons of VOC per year. These emissions are released to the atmosphere uncontrolled.

Regulatory Requirements:
The paper machines are not currently subject to any regulatory requirements under the NESHAP Standards, furthermore the processes are exempt from the Michigan SIP regulations because according to the MDEQ they were installed prior to August 15, 1967 and have not been modified since.

Power Plant

The power plant consists of three boilers that produce steam and a turbine generator that produce electricity per hour for internal use. The boilers are described as follows:

Boiler Nos.	Fuel	Date Installed	Rated Capacity
1	Coal/Oil/Gas	1950	240 MMBTU/HR
2	Coal/Oil/Gas	1950	186 MMBTU/HR
4A	Gas	2002	227 MMBTU/HR

The predominant fuel for boilers 1 and 2 is coal, however the boilers also have the capability to burn natural gas and fuel oil. The two boilers are each equipped with a reverse air baghouse and exhaust through a 193 feet high common stack. Boiler No. 2 is also equipped with a continuous opacity monitor. Boiler A4 is a gas fired boiler which was installed in 2002 and therefore is subject to 40 C.F.R. Part 60, Subpart Db. This boiler is equipped with low Nox burners and exhausts to the atmosphere via a 92 feet high individual stack. A continuous emission monitor is used to determine Nox emissions from boiler 4A.

In addition to the turbine generator, the steam produced by the boilers is used in a multitude of other processes at the plant including the digesters, multiple effect evaporator and the paper machines.

During the inspection I recorded the following operating parameters:

Boiler No.#1
Steam production = 180,000 lbs/hr @ 620 PSI and 689°F

Boiler No.#2
Steam production = 99,000 lbs/hr @ 605 PSI and 738°F

Boiler No. #4A
Not operating.

Power production = 8373 kw/h

Regulatory Requirements:

The boilers are subject to the Michigan SIP and terms and conditions of the ROP which among other requirements, establishes the following emission limits for the boilers:

Boiler #1
PM 0.10 lbs/1,000 lbs of exhaust gases @ 50% excess air

SO2 1.7 lbs/mmBtu of heat input when burning coal
1.11 lbs/mmBtu of heat input when burning No. 6 fuel oil

Nox No limit

Boiler #2
PM 0.10 lbs/mmBtu of heat input

SO2 1.7 lbs/mmBtu of heat input when burning coal
1.11 lbs/mmBtu of heat input when burning No. 6 fuel oil

Nox 0.20 lbs/mmBtu of heat input when burning oil or gas
0.70 lbs/mmBtu of heat input when burning coal

Boiler #4A
Nox 0.17 lbs/mmBtu of heat input, based on 30 rolling avg.

CO 22.7 lbs/hour, based on a 24 hour average, and 71.47 t/y.

Boiler 4A is also subject to the NSPS Subpart Db.

During this inspection I reviewed several quarters of EER for Nox for boiler #4A and opacity for boiler #2. The reports did not show high excess emissions for those boilers. I also reviewed test results for a PM stack test at boiler #2 which was conducted on November 11, 2001. The test result indicated that the boiler was meeting its permit PM limit.

General Concerns and Follow-Up

Facility's ROP indicates that boiler #2 was modified in 1983. However, according to the information stamped on the boiler plate, this boiler was modified in October 1986. Additional information will be obtained from the company to determine the extent of this modification.